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Issue 24 - 2010

In this issue:

- > *Coronectomy*
- > *Fractured files*
- > *Gout of the TMJ*
- > *Ferrules*
- > *Root dimensions*
- > *Cemental tears*
- > *Permanent tooth development*
- > *Outreach programme*
- > *Mucocele*
- > *Primary molar pulpotomy*



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Welcome to the Christmas issue of *Dental Review*. I have tried to find items appropriate to the season, but without much luck. Perhaps dental researchers don't do much that's festive, or maybe they keep it under wraps and don't write about it? I featured an article about whisky in Issue 22, so perhaps that will have to do for 2010. In the meantime, I would like to wish all of you a Merry Christmas and Happy New Year, and I look forward to your comments now and through 2011. I would also like to take this opportunity to thank our sponsors for their continuing support.

Best wishes,

Nick Chandler
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Coronectomy – oral surgery's answer to modern day conservative dentistry

Authors: Patel V et al

Summary: Coronectomy is carried out on mandibular third molars to reduce the risk of injury to the inferior dental nerve during extraction. It is based on the principle that most fragments of vital teeth left behind during tooth removal do not cause problems. There are few clinical trials, but they have good results. Root treatment is contraindicated, the fragment is left 3 mm below crestal bone level and if the root migrates later on, it should be in a more favourable position for removal.

Comment: This paper challenges oral surgery to be more conservative. Sadly, some patients who undergo this procedure will still suffer from a dry socket. The paper includes useful summaries on other 'conservative' topics such as bleaching, resin bonded bridges, ART (the atraumatic restorative technique) and the Hall method for managing carious primary molars.

Reference. *British Dental Journal* 2010;209:111-114

<http://www.nature.com/bdj/journal/v209/n3/abs/sj.bdj.2010.673.html>

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Impact of a retained instrument on treatment outcome: a systematic review and meta-analysis

Authors: Panitvisai P et al

Summary: This study sought to determine the difference in outcomes between cases with fractured endodontic instruments and matched conventional cases. A literature search revealed 125 studies, out of which two studies with 199 cases met inclusion criteria. About 81% of teeth healed when a periapical lesion was present, and 92% when there was no lesion originally. The prognosis when a fractured instrument was left in the canal was not significantly different.

Comment: A number of instruments and techniques are available to try to remove broken instruments, but there are hazards involved in their use. The removal of an excessive amount of tooth structure and perforation are key problems. This paper shows us just how sparse the data is – one of the papers considered was from 1970 and the other from 2005. Broken instruments in the apical third, and particularly where a curve is present, might be best followed-up and surgery considered if problems arise.

Reference: *Journal of Endodontics* 2010;36:775-780

<http://tinyurl.com/28unn8l>

Gout of the temporomandibular joint: a review of the literature

Authors: Bhattacharyya I et al

Summary: Gout involves elevated serum uric acid levels and the deposition of urate crystals in the tissues. Its prevalence is on the increase and it can lead to arthritis and neuropathy. Gouty arthritis rarely affects the head and neck but can lead to destruction of the TMJ. A case is reported in a 51-year-old woman. CT scans showed lysis of the condyle and extension to the zygomatic arch, coronoid notch and into the posterior ramus. Diagnosis was confirmed by two biopsies.

Comment: While very rare (11 cases in the English literature), gout of the TMJ may be overlooked even when it has been identified in other joints. It takes years, but eventually the crystals become big enough to see on radiographs. Cone beam imaging is recommended rather than CT to examine the bony parts of the joint.

Reference: *Journal of the American Dental Association* 2010;141:979-985

<http://jada.ada.org/cgi/content/abstract/141/8/979>

Rethinking ferrule – a new approach to an old dilemma

Authors: Jotkowitz A, Samet N

Summary: The survival of a root-treated tooth is directly related to the amount of remaining sound tooth tissue. The ferrule effect is used as a principle in the restoration of teeth with extensive structural loss, with a 2 mm height rule often applied. The authors review the literature, looking at ferrule height, width, the partial ferrule, loads and post and core materials. Crown lengthening surgery and orthodontic extrusion are also considered.

Comment: There's more to ferrules than I imagined (9 pages!), and perhaps not surprising is the conclusion that the evidence remains deficient as to how best to restore a root-filled tooth with extensive destruction. The second half of the paper is 'suggested clinical guidelines' and includes a treatment protocol chart.

Reference: *British Dental Journal* 2010;209:25-33

<http://www.nature.com/bdj/journal/v209/n1/full/sj.bdj.2010.580.html>



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Independent commentary by Associate Professor Nick Chandler of the Department of Oral Rehabilitation, University of Otago

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The dimensions of the roots of the human permanent dentition as a guide to the selection of optimal orthodontic forces

Authors: Lee B

Summary: It has been known since 1952 that orthodontic forces above a certain level produce lower rates of tooth movement than forces below that level. If optimal force levels could be determined before treatment, then appliances would be more efficient. This author investigated the relationships between the lengths, widths and projected areas of the roots of permanent teeth. Teeth were photographed and the lengths, widths and projected areas of selected surfaces were measured. Root length may be an acceptable indicator of root area for clinical purposes.

Comment: Almost 600 teeth were measured, including third molars. The molars were sectioned through their furcations, and a method of measuring bucco-lingual width is described. Graphs are provided to allow estimates of forces to be calculated.

Reference: *Australian Orthodontic Journal* 2010;26:1-9

http://www.aso.org.au/AOJ/AOJ_docs/Past_issues/Vol_26_No_1.htm#1

Cemental tear on a mandibular second molar: a case report

Authors: Lin H-J et al

Summary: Cemental tear is a variety of root fracture that causes a rapid and localised periodontal and sometimes periapical destruction. The tear is a complete separation of cementum along the cementodentinal junction, and is reported mostly on single-rooted teeth. This patient featured tears on both his mandibular first and second molars. Detached root fragments were discovered during exploratory flap surgery and the tears confirmed histopathologically. The treatment involved bone grafting and guided tissue regeneration.

Comment: These lesions cannot always be detected radiographically, so the diagnosis often relies on discovering the errant tissue and removing it. Age, trauma (injury and occlusal) and increased thickness and fragility of cementum are predisposing causes. This patient chewed a lot of hard food and had severe attrition of his posterior teeth.

Reference: *Odontology* 2010;98:173-176

<http://www.springerlink.com/content/4g176l906u706218/>

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Morphologic and developmental disturbances of permanent teeth following trauma to primary dentition in a selected group of Maltese children

Authors: Scerri E et al

Summary: How many permanent teeth are disturbed by trauma to the primary dentition? This investigation involved 32 children aged up to their fifth birthday with 67 injured primary teeth, and found that 52% of the teeth featured some developmental disturbance. All the injuries involved maxillary teeth. Problems were most common after a subluxation injury, with the most severe malformations after an intrusion. The age at which the injury occurred was the principle factor in the risk and severity of later problems; the younger the child, the higher the risk. The most common problem was a white or yellow-brown enamel discolouration.

Comment: It is estimated that one-third of 5-year-old children have traumatised their primary dentitions, with most accidents occurring in 2- and 3-year-olds as they become mobile and explore their surroundings. The apices of the primary teeth are very close to the developing permanent tooth germs. A control group of children with no trauma history was included in this report. While this paper largely confirms previous knowledge, it alerts us to the importance of the subluxation injury.

Reference: *Quintessence International* 2010;41:717-724

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Evaluation of a U.K. community-based clinical teaching/outreach program by former dental students two and five years after graduation

Authors: Lynch CD et al

Summary: This postal survey sought comments from graduates of Cardiff dental school about their experiences in a 12-chair purpose-built clinical facility away from their dental school. Students commenced as observers/assistants for two years and then treated patients for one day a week in their final year. All respondents thought the learning experience was helpful. The staff to student teaching ratio was 1:6 and the record-keeping paperless.

Comment: Most research on endeavours such as this involves a survey during or very soon after the event, so this report is different by seeking opinions some years later. Outreach programmes of all types are bold ventures and it is pleasing to report that one will be available for Otago dental students next year. Relevant to the New Zealand situation is the authors' comment that many dental schools are over 30 years old, so sadly for many students, the outreach clinic may offer a more 'state of the art' experience.

Reference: Journal of Dental Education 2010;74:1146-1152
<http://tinyurl.com/2u8dxf>

Clinical characteristics, treatment, and evolution of 89 mucoceles in children

Authors: Míñquez-Martínez I et al

Summary: Mucoceles arise from the minor salivary glands as a result of accumulation of mucus. They are most common in children and this paper investigated the clinical characteristics, treatment and outcome in 89 patients ranging in age from 0–14 years (mean 6.1). Patients over 10 years of age had local analgesia; the remaining patients had a GA. The lesions were most common on the lower lip, with some on the tongue, buccal mucosa and hard palate. Thirty-nine cases resolved spontaneously and 50 were treated, with four recurring within three months.

Comment: This retrospective study demonstrates how important it is to review these lesions shortly before surgery. Appointments were made within 2 months for local analgesia and four months for GA; during this period, many had resolved. The older children tended to have the lesion on their lower lips, suggesting a trauma history, which has been noted in previous studies.

Reference: Journal of Oral and Maxillofacial Surgery 2010;68:2468-2471
<http://www.joms.org/article/S0278-2391%2810%2900077-7/abstract>

Comparing gray mineral trioxide aggregate and diluted formocresol in pulpotomized human primary molars

Authors: Zealand CM et al

Summary: This report is of a multi-operator, multi-site, prospective randomised 6-month controlled clinical trial, which involved following-up 203 of 252 teeth. The clinical diagnosis in all cases was reversible pulpitis. In the formocresol group, haemostasis was achieved and then diluted formocresol applied to the amputated pulp for 5 minutes. In the MTA group, the material was placed on the pulp and across the chamber floor. All the teeth were then filled with IRM and stainless steel crowns cemented with a glass ionomer. At 6 months, there was no statistical difference in clinical outcome, with all the MTA cases and 97% of the formocresol treatments a success.

Comment: Formocresol has potential adverse effects, so MTA might replace it for primary molar pulpotomies. The expense of MTA has been a concern, but the authors calculate the cost per pulpotomy to be about \$US10 using packets of the Dentsply material.

Reference: Pediatric Dentistry 2010;32:393-399
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